

***HESPEROPHYLUM HEIDEMANNI*, A RARE PLANT BUG:  
NOTES AND NEW RECORDS (HETEROPTERA: MIRIDAE)**

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*Abstract.*—*Hesperophylum heidemanni* Reuter & Poppius, 1912 is one of the rarest mirids in eastern North America; a total of three females has been recorded from New Hampshire (type locality, Mt. Washington), District of Columbia, and Iowa. Herein new records are given for Alabama, Maryland, and North Carolina, and additional specimens from Washington, D.C., are reported. Post oak, *Quercus stellata* Wengen., is given as this mirid's first association with a particular plant species. Characters allowing its separation from *H. arizonae* Knight are provided, and the first Mexican record of this seldom-collected mirid (3 females now known) is given. Reasons for the apparent rareness of *H. heidemanni* are discussed, and reproduction by parthenogenesis is suggested.

*Key Words:* Insecta, *Hesperophylum*, distribution, parthenogenesis

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Many of the nearly 2000 mirid species reported from North America north of Mexico (Henry and Wheeler 1988) are poorly known. Most such plant bugs have remained obscure simply due to lack of collecting, especially in the western states, and because of ignorance of their habits. Little-collected Miridae, however, seldom prove rare once their host plants are discovered. In the eastern United States, *Polymerus nigropallidus* Knight, described from the New Jersey Pine Barrens without host data in 1923, was known only from the type locality until discovery of its host (the mat-forming *Arenaria caroliniana* Walt., Caryophyllaceae) showed that it is a common but specialist herbivore apparently restricted to pitch pine-scrub oak barrens (Henry 1978).

*Hesperophylum heidemanni* Reuter & Poppius, although widely distributed, may be a genuinely rare plant bug. Described nearly 80 years ago from Mt. Washington, New Hampshire, it is known in the literature only from three females. Other North

American mirids are known from fewer specimens, but nearly all belong to genera in which some species are abundant in at least part of their range. Assuming host information is available, there is no reason to believe that intensive collecting would not yield numerous additional specimens. But in the only other member of *Hesperophylum*, *H. arizonae* Knight, only two females have been reported.

Twelve years have passed since I discovered an apparent host for *H. heidemanni*, but I have refrained from publishing until more substantial information was available. Males and nymphs are still unknown, but I have decided to alert collectors to this unusual species—it seems sufficiently rare to warrant conjecture about its habits. Here, I give new state records and notes on its collection. A tentative biological characterization is offered, and its rareness is discussed. It is also compared with *H. arizonae*, and the first Mexican record of that species is given.



Fig. 1. *Hesperophylum heidemanni* female on bark of *Quercus stellata*.

*Hesperophylum heidemanni*  
Reuter & Poppius

Reuter and Poppius (1912) described this species (and new genus) from a female collected on Mt. Washington, New Hampshire (date and collector not given) and placed it in the small family Termitophylididae. Blatchley (1926) provided a free translation of their Latin description. Knight (1941) transferred *H. heidemanni* to the mirid subfamily Deraeocorinae, and Carvalho (1952) placed it in the tribe Termitophylini.

Single females of this "very rare" bug (Slater and Baranowski 1978) have been taken in Washington, D.C., and at Ames, Iowa (Knight 1941). Knight noted that the Iowa specimen was taken June 26, 1931. Collection data for the other specimen apparently have not been published; the label reads: "Washington D.C., 18-7, Collection O. Heidemann" (USNM). I tried to verify

that the type specimen was unlabeled as to date and collector, but it could not be located. Reuter and Poppius (1912) indicated that the type was being deposited at the USNM, but Blatchley (1926) said it was part of the Heidemann Collection at Cornell University. The type cannot be found at either institution and is not present at the Finnish Museum of Natural History, Helsinki, or the Swedish Museum of Natural History, Stockholm.

The Arizona record of this mirid (Barber 1914) refers to *H. arizonae* (Knight 1968), which was described from a female collected in the Atasco Mountains in 1937. In describing this new species, Knight overlooked the 1905 collection of a female from the Huachuca Mountains of Arizona, which Barber (1914) reported as *H. heidemanni*, and which he himself had mentioned (Knight 1941). A new record for *H. arizonae* is MEXICO: Durango: 12.5 km N Michilia

Fld. Stn., 42 km S Suchil, 2265 m, April 15, 1985, R. T. Schuh & B. M. Massie (American Museum of Natural History). This specimen was collected on oak, *Quercus* sp. (R. T. Schuh, personal communication).

*Hesperophylum heidemanni* can be keyed in Carvalho (1955) and Slater and Baranowski (1978). Knight (1941), Carvalho (1955), and Slater and Baranowski (1978) illustrated the head and pronotum. Its distinctive habitus (Fig. 1), resembling a stout anthocorid, is similar to that illustrated for *H. arizonae* (Knight 1968). *Hesperophylum heidemanni* is black, glossy (except anterior portion of pronotum), about 4 mm long, with head strongly declivent and pointed, and second antennal segment thickened and flattened. From *H. arizonae* it can be separated by its larger size (*H. arizonae* is about 3 mm long), entirely dark scutellum concolorous with pronotum and hemelytra (rather than ivory white; note: the scutellum of *H. heidemanni* is not yellowish white with the tip darker, as stated in original description), more coarsely punctate pronotal disc, and by other characters given by Knight (1968).

*New records:* Alabama, Maryland, and North Carolina can be added to the known distribution of *H. heidemanni*, and additional records from Washington, D.C., are available. All specimens (except the one from Maryland) were collected by the author on post oak, *Quercus stellata* Wengen. ALABAMA: Lee Co., Auburn University, 8 May 1986, 1 ♀. DISTRICT OF COLUMBIA: National Arboretum, Washington, 7 June 1982, 1 ♀; 1 June 1986, 2 ♀♀. MARYLAND: Calvert Co., Battle Creek Cypress Swamp, 3 Aug. 1987, A.B. Norden & D. Williams, 1 ♀. NORTH CAROLINA: Mecklenburg Co., Rt. 51, 1 mi. W. of Rt. 16 nr. Matthews, 28 May 1978, 2 ♀♀.

#### DISCUSSION

Almost nothing has been written about the habits of *H. heidemanni*. It has not been

reported from light trap, pitfall, or Berlese collections. Knight (1941) said that the Iowa specimen was swept beneath trees. Even so, this mirid most likely is arboreal. Post oak may be an important host plant in part of the range; similar collecting on other oak species and on other hardwood trees has not yielded specimens. But post oak could not have been the host on Mt. Washington because this tree ranges only as far north as southeastern Massachusetts (Little 1971). Some other plant (perhaps another species of oak) also must have served as the host at Ames, Iowa; native post oak is restricted to the extreme southeastern portion of Iowa (Little 1971).

Knight (1941) also remarked that the form of the head and the long rostrum suggest predacious habits, and further that such mirids are never as common as plant feeders. The six specimens I collected were obtained by beating well back (several meters) on branches of post oak. Predatory mirids such as some *Ceratocapsus* and *Eustictus* spp. also are consistently taken by beating branches of host trees (personal observation). Other termatophylines, e.g. *Termatophylidea* spp., are known predators (van Doesburg 1964, Callan 1975).

Other biological attributes of *H. heidemanni* remain even more speculative. Overwintering in the egg stage can be expected. This is the norm for most arboreal Miridae, although adults of some *Deraeocoris* spp. (Group I of Knight 1921) do hibernate. Most mirids of temperate regions produce a single annual generation, especially shrub- and tree-associated species, although some predatory mirids are multivoltine. Collection dates in Washington D.C., and the southeastern states—late May to early August—could indicate either uni- or bivoltinism in *H. heidemanni*.

This much is known: *H. heidemanni* is widely distributed, more so than many common, easily collected mirids. In this respect, it can be considered successful. The genus, however, has not diversified like the

deraeocorine genera *Deraeocoris* Kirschbaum (64 species in North America north of Mexico) and *Eustictus* Reuter (22 spp.) (Henry and Wheeler 1988). The tribe Termatophylini itself is small: seven genera, three of which are monotypic, with *Teratophyllum* Reuter (7 spp.) the largest (Carvalho 1957).

Slater (1974) considered the Termatophylini a relict group, suggesting that the presence of *H. heidemanni* in the northeastern states indicates an early arrival in the New World, perhaps from the Oriental Region. He also suggested that climatic deterioration during the Pleistocene and competition from more successful groups has led to range fragmentation.

Any comments about the origin, distribution, and biology of this mirid remain speculative. Is it a univoltine, mainly oak-associated predator restricted to a particular prey group? Do males occupy a different microniche on host branches so that they are not as easily dislodged as females? Or can *H. heidemanni* be parthenogenetic? An obligate parthenogenesis in the genus would be favored in species having widely scattered, sparse populations (e.g. Tomlinson 1966) and could account for this group's lack of diversification. This mode of reproduction is rare in the Miridae (and in Heteroptera). Only certain European populations of the dicyphine *Campyloneura virgula* (Herrich-Schaeffer) are definitely parthenogenetic (Carayon 1989).

General collectors and ecologists, as well as heteropterists, are encouraged to look for and report information on this rarely encountered bug. How long will it take to learn how much of the foregoing biological profile is accurate and to determine why *H. heidemanni* is genuinely rare?

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